

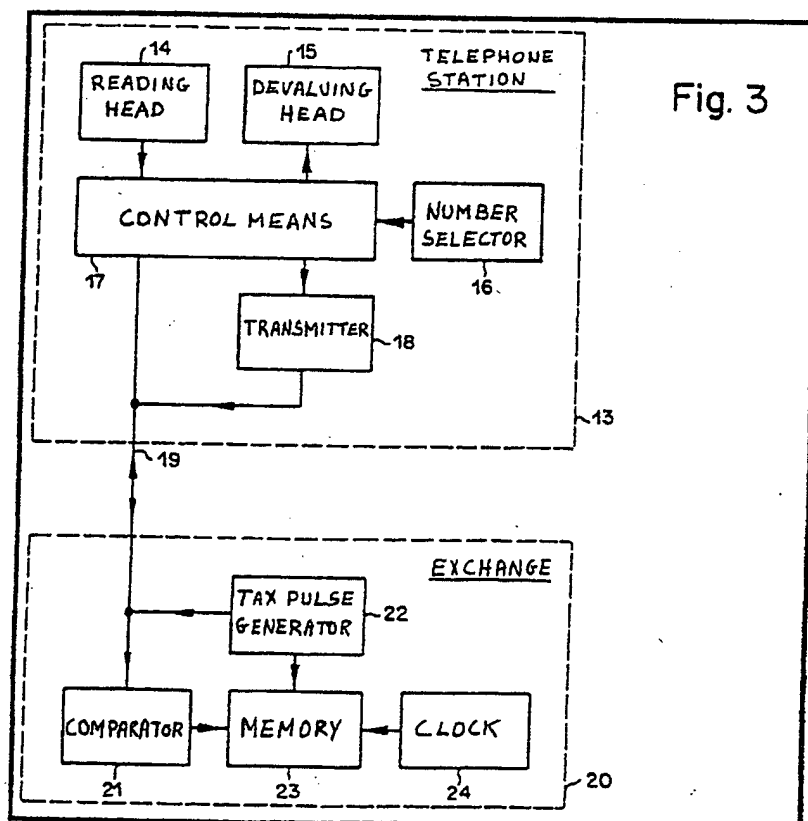
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(54) Apparatus for cashless telephoning

(57) A telephone station (13) is arranged for selectively receiving either a pre-paid-type credit card or an account-type credit card. A first classification code is stored on the pre-paid-type credit card and a second classification code and a card number are stored on the account-type credit card. When the first classification code is present on a card inserted into the apparatus, as detected by a reading head (14), the cost of the telephone call is debited thereon. If, on the other hand, an inserted card carries the second classification code, the card number is read out, the association of an identification number which is introduced by means of a keyboard or dial number selector (16) is checked by means of a comparator

(21), the connection is made by means of a yes-signal from the comparator (21) and the cost of the telephone call, together with an account number, are written into a memory (23).



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Fig. 1

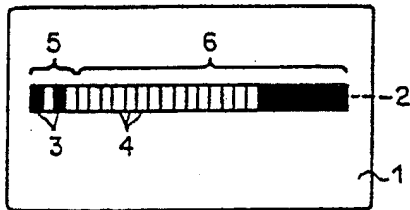


Fig. 2

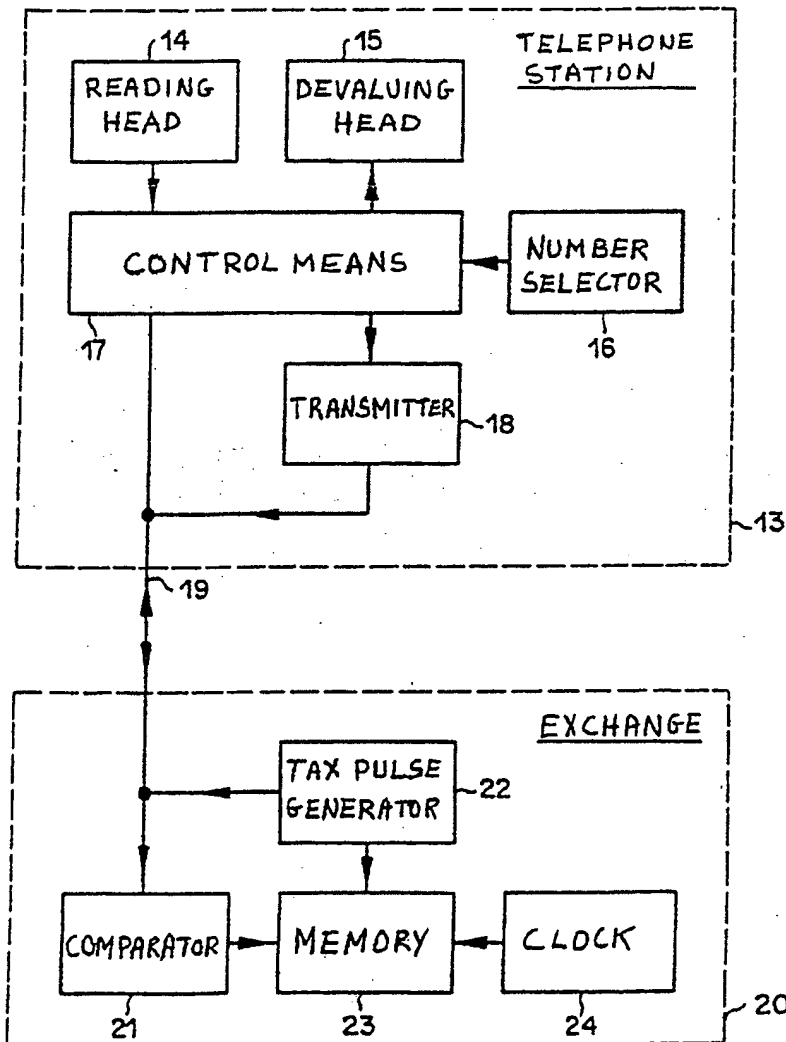
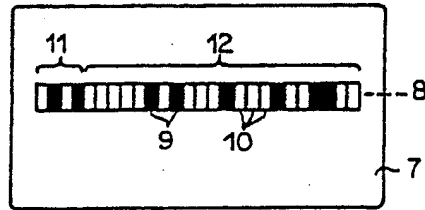


Fig. 3

SPECIFICATION

Apparatus for cashless telephoning

- 5 This invention relates to apparatus for cashless telephoning.

Apparatus for cashless telephoning known from Swiss Patent Specifications Nos.

- 574 144 and 572 299 comprises a telephone station which is connected by way of a telephone line to an exchange and which has a receiving slot for pre-paid-type credit cards, a reading head for reading out information stored on a pre-paid-type credit card, a devaluing head for debiting the cost of a telephone call on the pre-paid-type credit card, a control means connected to the reading head and the devaluing head, and a number selector. Such apparatus makes it possible for the cost of a telephone call to be settled by means of a pre-paid-type credit card, wherein the value of an amount of credit associated with the card is recorded, for example optically or magnetically, on the card and is reduced by an amount corresponding to the cost to be paid in respect of the telephone call at the time when the telephone station is used. For the user, this gives rise to the advantage that he does not need to have coins to hand in order to make a telephone call. Operation in this respect is extremely simple and the value of the pre-paid-type credit card is reduced in very small stages or increments, corresponding to the charge pulses which are emitted by the telephone exchange, so that neither the user nor the telephone authorities suffer loss. The telephone authorities enjoy the advantage of collection in advance, do not need to make provision for emptying collection boxes, and are protected from theft and from vandalism of collection boxes.

- It is also known for telephone authorities to issue customers with credit cards which entitle them to make telephone calls on credit. The user of the card gives his account number to the telephone operator at the exchange, whereupon the desired communication is opened and the cost of the telephone call is charged to a respective account. (To distinguish such credit cards from the pre-paid-type credit card referred to above, they will be hereinafter referred to as 'account-type credit cards'). With this manual credit service, it is not possible to check whether the user actually has an account-type credit card or whether he has given the telephone operator another account number, with fraudulent intent, so that frauds can very easily be perpetrated.

- Finally, it is known (for example from Swiss Patent Specification No. 604 285) to provide apparatuses for checking the association of an individual identification number with a card number stored on a card. Such apparatuses are used for checking people, for checking

- access to secured or protected areas and installations, for the identification of customers in the credit card business, and so on. In the use of the card, the card number is read out in a testing device and compared to the identification number which is inputted by the user into a keyboard.

- According to the present invention there is provided apparatus for cashless telephoning, comprising a telephone station which is connected by way of a telephone line to an exchange and which has a receiving slot for pre-paid-type credit cards, a reading head for reading out information stored on a pre-paid-type credit card, a devaluing head for debiting the cost of a telephone call on the pre-paid-type credit card, a control means connected to the reading head and the devaluing head, and a number selector, wherein the telephone station is arranged for selectively receiving a pre-paid-type credit card or an account-type credit card.

- An embodiment of the invention described hereinbelow comprises apparatus for cashless telephoning by means of which a telephone call can be made both by means of a pre-paid-type credit card and also by means of an account-type credit card, and wherein the account-type credit card and an identification number associated therewith are subjected to automatic testing.

- The invention will now be further described, by way of illustrative and non-limiting example, with reference to the accompanying drawing, in which:

Figure 1 shows a pre-paid type credit card.

Figure 2 shows an account-type credit card; and

- Figure 3 is a block diagram of an apparatus embodying the invention for cashless telephoning.

- A pre-paid type credit card 1 shown in Fig. 1 has one or more information tracks 2 thereon. Stored on the information track 2 is information in the form of optical markings 3 and optical markings 4 which are subsequently cancelled. The markings 3 are for example holograms which ensure a high degree of protection from forgery, in accordance with the difficulty of producing same, and which can be cancelled for example by a thermal action. Some of the remaining and cancelled markings 5 at the beginning of the information track 2 represent a first classification code which identifies the card 1 as being a pre-paid-type credit card. Each of the other markings 6, insofar as they have not yet been cancelled, represents a unit of value. In the illustrated example, some of the markings 6 have already been cancelled, that is to say, the credit card 1 has been partly reduced in value.

- An account-type credit card 7 shown in Fig. 2 has an information track 8 with remaining optical markings 9 and optical markings 10

which are subsequently cancelled. The markings 9 do not need to differ from the markings 3 of the pre-paid-type credit card 1 so that they can be read out at a telephone station using identical optical means. Some of the remaining and cancelled markings 11 at the beginning of the information track 8 represent a second classification code which identifies the card 7 as being an account-type credit card. The other markings 12, some of which have been cancelled and some of which have been allowed to remain, represent an individual card number in binary coded form. Associated with the card number, which may be identical to the account number of the card holder, is a secret individual identification number.

Referring now to Fig. 3, a telephone station 13 has a reading head 14 for reading out the information which is stored on the pre-paid-type credit card 1 or the account-type credit card 7, a devaluing head 15 for debiting the cost of the telephone call on the pre-paid-type credit card 1, a control means 17 which is connected to the reading head 14, the devaluing head 15 and a number selector 16 (dial or keyboard), and a transmitter 18. The control means 17 and the transmitter 18 are connected by way of a telephone line 19 to a telephone exchange 20. The transmitter 18 is used for transitting the card number to the telephone exchange by way of the telephone line 19, and at its output may have a pulse contact means which is connected in parallel with a pulse contact means of the selector 16.

Preferably, arranged in the exchange 20 is a comparator 21 which checks the association of an identification number, which is introduced by means of the selector 16, with the card number of an account-type credit card 7. The exchange 20 also includes a tax or charge pulse generator 22, a memory 23 and a clock 24.

The telephone station 13 is designed for selectively receiving a pre-paid-type credit card 1 or an account-type credit card 7. For this purpose, the user introduces his card into a receiving slot (not shown) in the telephone station 13, whereupon the control means 17 sets the reading head 14 in operation and the classification code is first read from the card. The read-out may be effected in known serial or parallel mode; in the serial mode, the card or the reading head 14 is moved mechanically so that the reading head 14 moves along the information track 2 or 8 respectively.

If the card which is introduced into the receiving slot is a pre-paid-type credit card 1 and the presence of the first classification code is accordingly detected by means of the reading head 14 and the control means 17, a check is then made as to whether the pre-paid-type credit card 1 has stored thereon units of value for settling the cost of the telephone call. If so, the desired communica-

tion is made and the cost of the telephone call is debited on the pre-paid-type credit card 1 by each tax or charging pulse which is emitted by the tax pulse generator 22 to the telephone station 13 causing actuation of the devaluing head 15 and a marking 6 being cancelled on the pre-paid credit card 1.

If, however, the card introduced into the receiving slot is an account-type credit card 7 and if, accordingly, the apparatus detects the presence of the second classification code, the reading head 14 still remains in operation after reading out the second classification code and the card number stored on the card 7 is read out, transitted to the exchange 20 by means of the transmitter 18, over the telephone line 19, and stored in the exchange 20, in the comparator 21, for a certain period of time. The card number may possibly be compared in the comparator 21 with a stop list. The user can then introduce his identification number into the telephone station by means of the selector 16. This identification number is transmitted to the exchange 20, like a telephone number, and is checked in the comparator 21. If the correct identification number, which is associated with the respective card number, has been selected by means of the selector 16, the desired telephone communication is made by virtue of a yes-signal from the comparator 21, the user can select a telephone number to call, and the cost of the telephone conversation is calculated in the exchange 20 by continuous counting of the tax or charging pulses and written into the memory 23, at the end of the telephone conversation, together with an account number associated with the credit card 7. The account number may be the card number the identification number or a third associated number. The cost of the telephone call may be registered in the memory 23 by storage of the number of tax pulses or the tax or charge calculated therefrom. Advantageously, the date and the time of the telephone communication are established by means of the clock 24 and also stored in the memory 23, together with the cost of the telephone call and the account number. The called telephone number can also be registered in the memory 23.

The data contained in the memory 23 can be periodically read out, transmitted into a central data evaluation station and charged to the holder of the account, for example at the same time as the usual telephone account.

The above-described apparatus permits the user of public telephone stations, as desired, to pay for the cost of the telephone call in advance by purchasing a pre-paid-type credit card 1 or to make telephone calls on credit by means of an account-type credit card 7 and thus only pay for the telephone call at a later date. The co-operation of a telephone operator 130 when making a credit connection is not re-

quired, and the level of the possible cost of a telephone call is not restricted by possessing pre-paid-type credit cards bearing the appropriate value. There is virtually no possibility of fraudulent dealing to the disadvantage of third parties, as it is necessary both for a valid account-type credit card to be available, and also for the associated identification number to be known, in order to take advantage of a credit connection.

It is possible for the comparator 21 and the memory 23 to be arranged not in the exchange 20 but in each individual telephone station 13, so that the transmitter 18 is unnecessary. In this case, the memory 23 is advantageously in the form of a cassette memory, the cassette of which can be easily replaced for the purpose of conveying the data to a central location. Arranging the comparator 21 in the exchange 20 is to be preferred if checking of the association of the identification number with the card number requires large-scale and expensive operations, for example performing complex algorithms.

The above-described mode of storing the information on the pre-paid-type credit card 1 or on the account-type credit card 7 by means of optical markings ensures a very high degree of safety from fraudulent dealing, with low production costs in respect of the cards. It is possible, however, to use other modes of storage, for example magnetic or electronic. The cost of a telephone call may be debited on the pre-paid type credit card 1 by stepwise cancellation of units of value during the telephone communication or by totally cancelling the credit and putting the new remaining credit into store after the telephone call has been terminated.

CLAIMS

1. Apparatus for cashless telephoning, comprising a telephone station which is connected by way of a telephone line to an exchange and which has a receiving slot for pre-paid-type credit cards, a reading head for reading out information stored on a pre-paid-type credit card, a devaluing head for debiting the cost of a telephone call on the pre-paid-type credit card, a control means connected to the reading head and the devaluing head, and a number selector, wherein the telephone station is arranged for selectively receiving a pre-paid-type credit card or an account-type credit card.

2. Apparatus according to claim 1, for use when a first classification code is stored on the pre-paid credit card and a second classification code and a card number are stored on the account-type credit card, the apparatus comprising a memory and a comparator for checking the association of an identification number introduced by means of the number selector with the card number, the control means being so designed that, when the first

classification code is present on a card introduced into the receiving slot, the cost of the telephone call is debited on the card and, when the second classification code is present on a card introduced into the receiving slot, the card number is read out, the association of the introduced identification number with the card number is checked in the comparator, a connection is made by virtue of a yes-signal from the comparator, and the cost of the telephone call together with an account number associated with the card is written into the memory.

3. Apparatus according to claim 2, wherein the telephone station has a transmitter for transmitting the card number by way of the telephone line to the exchange, and the memory is arranged in the exchange.

4. Apparatus according to claim 3, wherein the comparator is arranged in the exchange.

5. Apparatus according to claim 3 or claim 4, wherein the memory is connected to a clock for the purpose of putting into store the date and the time of a telephone connection.

6. Apparatus according to claim 2, wherein the memory is arranged in the telephone station and is in the form of a cassette memory.

7. Apparatus for cashless telephoning, the apparatus being substantially as herein described with reference to the accompanying drawing.

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